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EXAMINER	
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SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/600,589	HERLEY ET AL.	
	Examiner	Art Unit	
	Dorothy Sarah Siedler	2626	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 June 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-66* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-66* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 June 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *10-21-05*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This is the initial response to the application filled June 19, 2003. Claims 1-66 are pending and are considered below.

Claim Objections

Claim 7 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 4. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Claim 7 recites the same limitation verbatim, as recited in claim 4.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-8, 10-12, 14-17, 22, 23-31, 37-43, 45,46 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Pitman*** (6,574,594) in view of ***Ellis*** (5,504,518).

As per claim 1, ***Pitman*** discloses a computer-implemented process for providing an interactive user interface to a database of information describing contents of an input signal, comprising: extracting at least one fingerprint from each of at least one sample of at least one input signal (column 5 lines 10-16, *for each piece of audio content received, a feature signature, or a key, is generated*); comparing the extracted fingerprints to known fingerprints in a database of fingerprints of known signal objects to locate matching fingerprints for identifying one or more objects embedded in the at least one input signal as a known signal object (column 5 lines 16-18); providing an interactive user interface for querying the statistical information in the object database (column 3 lines 18-20 and lines 50-60, *a web browser is used to decode multimedia data streaming from the first and second servers*). ***Pitman*** does not explicitly disclose in an object database, storing statistical information derived from the at least one input signal for each sample having an extracted fingerprint that matches a known fingerprint, and storing one or more extracted fingerprints that do not match any fingerprints in the database of fingerprints to the database of fingerprints as an unknown object fingerprint for use in matching subsequent instances of repeating objects in the at least one input signal. However, ***Pitman*** does disclose a user interface, and indicates that the system can be used to gather information about the identified audio segments (column 5 lines 44-65, *using identification and source information for each identified piece of information, a list is compiled which is used for market research purposes, popularity ratings, etc.*). In addition, ***Ellis*** discloses storing one or more extracted fingerprints that do not match any fingerprints in the database (column 6 lines 16-22, *a broadcast signal*

is monitored, and if it is determined to deviate from all known signals it is tagged as a new signal of interest, and a signature (fingerprint) is extracted and saved in a database).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to store statistical information derived from the at least one input signal in an object database, or supplemental temporary database, and store one or more extracted fingerprints that do not match any fingerprints in the database of fingerprints to the database of fingerprints as an unknown object fingerprint in ***Pitman***, since an object database, storing information pertaining to recently identified audio segments, would provide quick and efficient access to information about the recently identified audio segments; that information then used for market research purposes, as taught in ***Pitman*** (column 5 lines 60-61). In addition, saving fingerprints that don't match fingerprints in the database would enable the system to update its recognition database as indicated in ***Ellis*** (column 6 lines 7-8).

As per claim 23, ***Pitman*** discloses a system for determining content of multiple media streams in real time, comprising: comparing each signal fingerprint to a fingerprint database, said fingerprint database including known fingerprints of known media objects and metadata information describing the known media objects (column 5 lines 10-16, *for each piece of audio content received, a feature signature, or a key, is generated,* and column 5 lines 25-30, *for each identified audio piece, audio content identification and source information are saved*); identifying one or more media objects by locating

matching fingerprints of known media objects to each signal fingerprint (column 5 lines 16-18); providing an interactive user interface for allowing at least one remote client computer to interact across a network with the object database residing on the at least one local server computer (column 3 lines 18-20 and lines 50-60, *a web browser is used to decode multimedia data streaming from the first and second servers*) . ***Pitman*** does not explicitly disclose populating an object database residing on at least one local server computer with statistical information derived from each identified media object, and with any metadata associated with the matching fingerprint of any known media objects, simultaneously monitoring two or more media streams in real time, sampling each media stream, and deriving a signal fingerprint from each sample from each media stream. However, ***Pitman*** does disclose a user interface, and indicates that the system can be used to gather information about the identified audio segments (column 5 lines 44-65, *using identification and source information (metatdata) for each identified piece of information, a list is compiled (statistical information) which is used for market research purposes, popularity ratings, etc.*). ***Pitman*** also discloses deriving a signal fingerprint (signature or set of keys) for input media (column 5 lines 10-16, *for each piece of audio content received, a feature signature, or a key, is generated*). ***Ellis*** discloses simultaneously monitoring two or more media streams (column 8 lines 65-67 and Figure 1 item 16, *each local site monitors a broadcast signal for a particular geographical area, then communicates that information to a central site*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to simultaneously monitor two or more media streams in real time,

sample each media stream, and derive a signal fingerprint from each sample from each media stream in ***Pitman***, since it would enable the system to gather broadcast information from various geographical sites, as indicated in ***Ellis*** (column 8 lines 65-67).

It would also have been obvious to one of ordinary skill in the art at the time of the invention to store statistical information derived from the at least one input signal in an object database in ***Pitman***, since an object database, storing information pertaining to recently identified audio segments, would provide quick and efficient access to information about the recently identified audio segments; that information then used for market research purposes, as taught in ***Pitman*** (column 5 lines 60-61).

As per claim 2, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses wherein the database of fingerprints includes metadata corresponding to information describing attributes of fingerprints in the database of fingerprints (column 5 lines 25-30, *for each identified audio piece, audio content identification and source information (metadata) are saved*).

As per claim 3, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 2, however ***Pitman*** does not explicitly disclose further extracting any metadata and statistical information associated with any extracted fingerprints that match an entry in the database of fingerprints, and storing the extracted metadata to the object database for each sample having an extracted fingerprint that matches a fingerprint of a

known signal object. ***Pitman*** does indicate that identification information (metadata) is saved for every identified audio segment, and the system uses that information to determine other information of interest (column 5 lines 25-30 and lines 44-65, *using identification and source information (metadata) for each identified piece of information, a list is compiled which is used for market research purposes, popularity ratings, etc.*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to extract and store metadata and statistical information in an object database in ***Pitman***, since an object database, storing information pertaining to identified audio segments, would provide information for market research purposes, as taught in ***Pitman*** (column 5 lines 60-61)

As per claims 4,7, and 10, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further suggests wherein the at least one input signal comprises one or more user selectable FM radio station broadcast signals in one or more geographic regions (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including radio).*

As per claim 5, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses wherein the at least one input signal comprises one or more television broadcast signals in one or more geographic regions (column 3

lines 1-6, *the system can accommodate any type of broadcast signal, including television).*

As per claim 6, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses wherein the at least one input signal comprises one or more cable video signals in one or more geographic regions (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including cable).*

As per claim 8, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses wherein the at least one input signal comprises one or more Internet multimedia streams (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including Internet).*

As per claim 11, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses buffering the at least one input signal for a predetermined period of time (column 8 lines 35-37, *events are produced from an audio signal, the event stored in a buffer until they are read by the key generator*).

As per claim 12, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses storing the at least one input signal on a computer readable medium (column 8 lines 31-37, *events are produced from an audio signal, the event stored in memory such as RAM*).

As per claim 14, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further disclose wherein the interactive user interface is a web-browser based user interface for performing user queries of the object database across the Internet (column 3 lines 48-55, *a web browser such as Netscape Navigator*).

As per claim 15, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, however ***Pitman*** does not explicitly disclose identifying one or more objects embedded in the at least one input signal as an unknown object by comparing the extracted fingerprints to unknown object fingerprints in the database of fingerprints of known and unknown signal objects to locate matching fingerprints. ***Ellis*** discloses identifying one or more objects embedded in the at least one input signal as an unknown object by comparing the extracted fingerprints to unknown object fingerprints in the database of fingerprints of known and unknown signal objects to locate matching fingerprints (column 6 lines 16-22, *a broadcast signal is monitored, and if it is determined to deviate from all known signals it is tagged as a new signal of interest, and a signature (fingerprint) is extracted and saved in a database).*

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to identify unknown object fingerprints in the database if ***Pitman***, since it would enable the system to update its recognition database as indicated in ***Ellis*** (column 6 lines 7-8).

As per claim 16 and 37, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claims 1 and 23, and ***Pitman*** further discloses wherein the interactive user interface for querying the statistical information in the object database comprises at least one predefined user selectable database query (column 5 lines 31-36, *a copyright holder uses the system to automatically compile a list of broadcasts of its copyrighted content*).

As per claim 17, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses wherein the object database is implemented on at least one local server computer and the interactive user interface is provided on at least one remote client computer accessible via the Internet for providing remote client interaction with the local object database (column 3 lines 7-20 and Figure 1 items 102 and 112).

As per claim 18, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses automatically generating at least one set of information for characterizing at least one of the input signals, and automatically transmitting that set of information from a server computer to at least one client computer (column 11 lines 14-17, retrieval phase).

As per claims 22 and 48, ***Pitman*** in view of ***Ellis*** disclose the system of claim 17, and ***Pitman*** further discloses a user interface for entering metadata associated each user specified signal sample (column 3 lines 18-20 and lines 50-60, *a web browser is used to decode multimedia data streaming from the first and second servers*).

As per claim 24, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Pitman*** further discloses wherein the network is the Internet (column 2 line 66 – column 3 line 2).

As per claim 25, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Pitman*** further discloses wherein the media objects are any of songs, music, advertisements, commercials, station identifiers, speech audio clips, and emergency broadcast signals (Abstract, *broadcast audio content*).

As per claim 26, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Pitman*** further suggests wherein the two or more media streams comprise television broadcast signals (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including television).*

As per claim 27, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Pitman*** further discloses wherein the two or more media streams comprise cable multimedia broadcast signals (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including cable).*

As per claim 28, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Pitman*** further discloses wherein the two or more media streams comprise Internet multimedia streams (column 2 line 66 – column 3 line 2, *the system monitors an audio broadcast over a network, such as the Internet).*

As per claim 29, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Pitman*** further suggests wherein the two or more media streams comprise automatically selected FM radio station broadcast signals in one or more geographic regions (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including radio*

broadcast signals. Since FM is one type of radio signal, it must be able to monitor FM radio signals).

As per claim 30, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Pitman*** further suggests wherein the two or more media streams comprise user selectable FM radio station broadcast signals in one or more geographic regions (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including radio. Since FM is one type of radio signal, it must be able to monitor FM radio signals).*

As per claim 31, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Ellis*** further discloses simultaneously applying separate fingerprint extraction engines to each media stream for deriving the signal fingerprint for each sample from each media stream (column 8 lines 65-67 and Figure 1 item 16, *each local site monitors a broadcast signal for a particular geographical area, generates a fingerprint, then communicates that information to a central site*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to simultaneously apply separate fingerprint extraction engines to each media stream for deriving the signal fingerprint for each sample from each media stream in ***Pitman***, since it would enable the system to simultaneously gather broadcast information from various geographical sites, as indicated in ***Ellis*** (column 8 lines 65-67).

As per claims 38,39,40 and 41 ***Pitman*** in view of ***Ellis*** disclose the system of claim 37, however ***Pitman*** does not explicitly disclose wherein the at least one predefined user selectable query includes a query for displaying user selectable music artist statistical information, statistical content information, and statistical commercial information with respect to one or more user selectable media streams. However, ***Pitman*** does disclose a system that can be used to automatically query broadcast content and gather statistical information (column 5 lines 30-36). In addition, broadcast content includes information on music artist information and commercials.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have a query that includes music artist statistical information in ***Pitman,*** since it would enable a copyright holder to automatically compile a list of broadcasts of its copyrighted material, and collect royalties based on the number of broadcasts of the copyrighted material, as taught in ***Pitman*** (column 5 lines 30-360.

As per claim 42, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, and ***Pitman*** further discloses storing each monitored media stream for a predetermined period of time (column 8 lines 31-37, *the audio signal is stored in a buffer until it is read by the key generator process*).

As per claim 43, ***Pitman*** in view of ***Ellis*** disclose the system claim 23, and ***Pitman*** further discloses wherein the interactive user interface further comprises a user selectable control for automatically providing a playback of at least one user selectable media object identified in one or more of the media streams (column 3 lines 56-61, *a web browser is used to decode the media stream and send it to the sound card and speakers).*

As per claim 45, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, however ***Pitman*** does not explicitly disclose automatically adding any fingerprints derived from each sample to the fingerprint database where the derived fingerprints do not match any signal fingerprints in the fingerprint database. ***Ellis*** discloses storing one or more extracted fingerprints that do not match any fingerprints in the database (column 6 lines 16-22, *a broadcast signal is monitored, and if it is determined to deviate from all known signals it is tagged as a new signal of interest, and a signature (fingerprint) is extracted and saved in a database).*

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to automatically adding any fingerprints derived from each sample to the fingerprint database where the derived fingerprints do not match any signal fingerprints in the fingerprint database since it would enable the system to update its recognition database as indicated in ***Ellis*** (column 6 lines 7-8).

As per claim 46, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, however ***Pitman*** does not explicitly disclose automatically compiling a predetermined set of information from the object database, and automatically pushing that information from at least one of the local server computers to at least one of the remote client computers. However, ***Pitman*** does disclose that the system can be used to gather broadcast signal information from the database (column 5 lines 30-65). Performing this function automatically is simply automating a manual process.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to automatically compile a predetermined set of information from the object database, and automatically pushing that information from at least one of the local server computers to at least one of the remote client computers in ***Pitman***, since a computer performing the automatic process, which would be used to determine licensing fees for the broadcast media, can perform function at a much greater speed then a human performing the manual process, this saving time and resources needed to gather the information.

Claims 13,19,21,32,35,44,49 are rejected over ***Pitman*** in view of ***Ellis***, further in view of ***Eubanks*** (6,704,553).

As per claim 13, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, and ***Pitman*** further discloses extracting a sample fingerprint from each signal

sample, adding each sample fingerprint to the database of fingerprints (column 5 lines 10-16 and column, *for each piece of audio content received, a feature signature, or a key. Incoming data is compared to keys in a database, so there must have been keys added to the database*), and identifying one or more objects embedded in the at least one input signal by comparing the extracted fingerprints to sample fingerprints added to the database of fingerprints (column 5 lines 16-18). However neither ***Pitman*** nor ***Ellis*** disclose obtaining at least one signal sample via the user interface. ***Eubanks*** discloses a system for automatic control a radio turner, where the user can input preference information (column 5 lines 22-40, *the user indicates their like or dislike of a current song being played*). A system that enables user input is well known, as indicated by ***Eubanks***.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to obtain at least one signal sample via the user interface in ***Pitman*** and ***Ellis***, since it would enable the user to design the fingerprint database and system controls according to their personal preferences, as indicated in ***Eubanks***, (column 1 lines 48-67).

As per claim 19, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, however neither disclose wherein sampling of a particular input signal is suspended for a period of time when an object embedded in that input signal is identified in that signal, and where the period of time is either predetermined or is

determined by the characteristics of the identified object. ***Eubanks*** discloses a system that suspends sampling and playback of a signal for a period of time when an object embedded in the signal is identified (column 4 lines 5-20, *the system determines if the template created by the signal matches a stored set of templates. If it does, the system sends a control signal to the tuner, which tunes to a new frequency*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to suspend sampling of an input signal for a period of time when an object embedded in the signal is identified in ***Pitman*** and ***Ellis***, since it would enable the system to skip songs, commercials, or other content that the user indicated a dislike of, as indicated in ***Eubanks*** (column 4 lines 17-19).

As per claim 21 ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, however neither discloses a user interface for inputting at least one user specified signal sample, and wherein fingerprints are automatically extracted from each user specified signal sample and added to the known fingerprints in the database of fingerprints. ***Eubanks*** discloses a system for automatic control a radio turner, where the user can input preference information (column 5 lines 22-40, *the user indicates their like or dislike of a current song being played*). A system that enables user input is well known, as indicated by ***Eubanks***.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to extract fingerprints from each user specified speech signal in

Pitman and ***Ellis***, since it would enable the user to design the fingerprint database and system controls according to their personal preferences, as indicated in ***Eubanks***, (column 1 lines 48-67).

As per claim 32 and 35, ***Pitman*** in view of ***Ellis*** disclose the system of claim 29, however neither discloses monitoring at least one automatically tunable receiver, wherein each automatically tunable receiver automatically switches between at least two radio broadcast streams at predefined intervals, and intervals that are defined by what has been identified, and samples each of the at least two radio broadcast streams for a predefined period of time. ***Eubanks*** discloses a system that switched between radio broadcasts at predetermined time intervals as well as intervals that are defined by what has been identified (column 5 lines 21-31, *the system outputs audio content until it receives a signal from the user indicating a like or a dislike* and column 4 lines 5-20, *the system determines if the template created by the signal matches a stored set of templates. If it does, the system sends a control signal to the tuner, which tunes to a new frequency*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to automatically switch between two radio broadcast streams based on predetermined time intervals, and time intervals that are defined by what has been identified in ***Pitman*** and ***Ellis***, since it would enable the system to skip songs,

commercials, or other content that the user indicated a dislike of, as indicated in ***Eubanks*** (column 4 lines 17-19).

As per claim 44, ***Pitman*** in view of ***Ellis*** disclose the system claim 23, however neither explicitly discloses wherein the interactive user interface further comprises a control for adding a user selectable media sample corresponding to a user identified media object, and wherein a signal fingerprint is automatically derived from the user selectable media sample and added to the fingerprint database along with user entered metadata for describing the user selectable media sample. ***Eubanks*** discloses a system for automatic control a radio turner, where the user can input preference information (column 5 lines 22-40, *the user indicates their like or dislike of a current song being played*). A system that enables user input is well known, as indicated by ***Eubanks***.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to extract fingerprints from each user specified media sample in ***Pitman*** and ***Ellis***, since it would enable the user to design the fingerprint database and system controls according to their personal preferences, as indicated in ***Eubanks***, (column 1 lines 48-67).

As per claim 49, ***Pitman*** in view of ***Ellis*** disclose the system of claim 48, ***Pitman*** further discloses storing that fingerprint and any associated metadata in the fingerprint database (column 5 lines 10-16, *for each piece of audio content received, a feature*

signature, or a key, is generated, and column 5 lines 25-30, *for each identified audio piece, audio content identification and source information are saved*). However, neither ***Pitman*** nor ***Ellis*** explicitly discloses automatically deriving a signal fingerprint from each user media sample. ***Eubanks*** discloses a system for automatic control a radio turner, where the user can input preference information (column 5 lines 22-40, *the user indicates their like or dislike of a current song being played*). A system that enables user input is well known, as indicated by ***Eubanks***.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to extract fingerprints from each user specified media sample in ***Pitman*** and ***Ellis***, since it would enable the user to design the fingerprint database and system controls according to their personal preferences, as indicated in ***Eubanks***, (column 1 lines 48-67).

Claims 9,33,34 are rejected over ***Pitman*** in view of ***Ellis***, further in view of ***Olerud*** (2,776,429).

As per claim 9, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 4, however neither explicitly discloses multiplexing two or more FM radio station broadcast signals into a single input signal prior to extracting the at least one fingerprint from that single input signal. ***Olerud*** discloses a multiplex system for FM broadcast transmitters and receives (column 1 lines 15-19). Multiplexing two or more broadcast signals is well known in the art, as indicated by ***Olerud*** (column 1 lines 15-19).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to multiplex two or more FM radio station broadcast signals in ***Pitman*** and ***Ellis***, since it would enable the simultaneous transmission of one or more signals, as indicated in ***Olerud*** (column 1 lines 19-22).

As per claim 33, ***Pitman*** in view of ***Ellis*** disclose the system of claim 31, however neither explicitly discloses multiplexing the samples from each automatically tunable receiver into a separate multiplexed radio broadcast stream. ***Olerud*** discloses a multiplex system for FM broadcast transmitters and receives (column 1 lines 15-19). Multiplexing two or more broadcast signals is well known in the art, as indicated by ***Olerud*** (column 1 lines 15-19).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to multiplex two or more FM radio station broadcast signals in ***Pitman*** and ***Ellis***, since it would enable the simultaneous transmission of one or more signals, as indicated in ***Olerud*** (column 1 lines 19-22).

As per claim 34, ***Pitman*** in view of ***Ellis*** further in view of ***Olerud*** disclose the system of claim 33, and ***Ellis*** further discloses deriving the signal fingerprint for each sample from each radio stream comprises simultaneously operating a separate fingerprint extraction engine for each multiplexed radio broadcast stream for deriving the signal fingerprint for each sample comprising each multiplexed radio broadcast stream column 8 lines 65-67

and Figure 1 item 16, *each local site monitors a broadcast signal for a particular geographical area, generates a fingerprint, then communicates that information to a central site*).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to simultaneously applying separate fingerprint extraction engines to each multiplexed broadcast stream for deriving the signal fingerprint for each sample from each multiplexed broadcast stream in ***Pitman***, since it would enable the system to simultaneously gather broadcast information from various geographical sites, as indicated in ***Ellis*** (column 8 lines 65-67).

Claims 20 and 47 are rejected over ***Pitman*** in view of ***Ellis***, further in view of ***Burges*** ("Extracting Noise-Robust Features from Audio Data" IEEE ICASSP 2002).

As per claim 20, ***Pitman*** in view of ***Ellis*** disclose the computer-implemented process of claim 1, however neither disclose wherein extracting at least one fingerprint from each of at least one sample comprises performing a distortion discriminant analysis of each sample to generate fingerprints. ***Burges*** discloses a system that uses distortion discriminant analysis for audio fingerprinting (Abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to extract at least one fingerprint from each of at least one sample

comprises performing a distortion discriminant analysis of each sample to generate fingerprints in ***Pitman*** and ***Ellis***, since it provides an efficient feature extraction operation that produces robust features from the audio data, as indicated in ***Burges*** (Abstract).

As per claim 47, ***Pitman*** in view of ***Ellis*** disclose the system of claim 23, however neither explicitly discloses wherein deriving a signal fingerprint from each sample from each media stream comprises applying a distortion discriminant analysis to each sample for deriving a trace representing a signal fingerprint from each sample. ***Burges*** discloses a system that uses distortion discriminant analysis for audio fingerprinting (Abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to extract at least one fingerprint from each of at least one sample comprises performing a distortion discriminant analysis of each sample to generate fingerprints in ***Pitman*** and ***Ellis***, since it provides an efficient feature extraction operation that produces robust features from the audio data, as indicated in ***Burges*** (Abstract).

Claim 36 is rejected over ***Pitman*** in view of ***Ellis***, further in view of ***Eubanks*** and further in view of ***Olerund***.

As per claim 36, ***Pitman*** in view of ***Ellis*** further in view of ***Eubanks*** disclose the system of claim 35, however neither ***Pitman***, ***Ellis*** nor ***Eubanks*** disclose multiplexing the samples from each automatically tunable receiver into a separate multiplexed radio broadcast stream. ***Olerud*** discloses a multiplex system for FM broadcast transmitters and receives (column 1 lines 15-19). Multiplexing two or more broadcast signals is well known in the art, as indicated by ***Olerud*** (column 1 lines 15-19).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to multiplex the samples from each automatically tunable receiver into a separate multiplexed radio broadcast stream in ***Pitman*** and ***Ellis***, since it would enable the simultaneous transmission of one or more signals, as indicated in ***Olerud*** (column 1 lines 19-22).

Claims 50-56, 58-61, 63-65 are rejected over ***Pitman*** in view of ***Ellis***, further in view of ***Eubanks***.

As per claim 50, ***Pitman*** discloses a method for providing an interactive user interface for querying a database of content information that characterizes at least one signal, comprising: identifying one or more media objects in one or more of the broadcast signals by comparing each media object trace fingerprint to the known fingerprints in the

fingerprint database to locate matching fingerprints of known media objects (column 5 lines 16-18); and providing an interactive user interface for allowing at least one remote client computer to interact across a network with the object database residing on the at least one local server computer (column 3 lines 18-20 and lines 50-60, *a web browser is used to decode multimedia data streaming from the first and second servers*). However, ***Pitman*** does not explicitly disclose monitoring at least one user selectable media broadcast signal common to a user selectable geographic region using at least one automatically tunable receiver, sampling each broadcast signal for any of predefined periods of time and for periods of time determined by media objects identified in the at least one broadcast signal; deriving a media object trace fingerprint from each sample, using a separate instance of a fingerprint engine for each receiver for simultaneously processing each monitored broadcast signal in real-time; comparing each media object trace fingerprint to a fingerprint database, said fingerprint database including known fingerprints of known media objects, metadata information describing the known media objects, and fingerprints of unknown objects for identifying unknown but repeated objects; populating an object database residing on at least one local server computer with statistical information derived from each identified media object, and with any metadata associated with the matching fingerprint of any known media objects; ***Ellis*** discloses deriving a media object trace fingerprint from each sample, using a separate instance of a fingerprint engine for each receiver for simultaneously processing each monitored broadcast signal in real-time (column 8 lines 65-67 and Figure 1 item 16, *each local site monitors a broadcast signal for a particular geographical area, generates*

a fingerprint, then communicates that information to a central site); comparing each media object trace fingerprint to a fingerprint database, said fingerprint database including known fingerprints of known media objects, metadata information describing the known media objects, and fingerprints of unknown objects for identifying unknown but repeated objects (column 6 lines 16-22, *a broadcast signal is monitored, and if it is determined to deviate from all known signals it is tagged as a new signal of interest, and a signature (fingerprint) is extracted and saved in a database).* ***Eubanks*** discloses monitoring at least one user selectable media broadcast signal common to a user selectable geographic region using at least one automatically tunable receiver, sampling each broadcast signal for any of predefined periods of time and for periods of time determined by media objects identified in the at least one broadcast signal (column 5 lines 21-31, *the system outputs audio content until it receives a signal from the user indicating a like or a dislike* and column 4 lines 5-20, *the system determines if the template created by the signal matches a stored set of templates. If it does, the system sends a control signal to the tuner, which tunes to a new frequency*). In addition, However, ***Pitman*** discloses a user interface, and indicates that the system can be used to gather information about the identified audio segments (column 5 lines 44-65, *using identification and source information for each identified piece of information, a list is compiled which is used for market research purposes, popularity ratings, etc.*

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to simultaneously applying separate fingerprint extraction engines to each media stream for deriving the signal fingerprint for each sample from each media

stream, and identify unknown object fingerprints in ***Pitman***, since it would enable the system to simultaneously gather broadcast information from various geographical sites, and update its recognition database as indicated in ***Ellis*** (column 8 lines 65-67 and column 6 lines 7-8).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to media streams based on predetermined time intervals, and time intervals that are defined by what has been identified in ***Pitman***, since it would enable the system to skip songs, commercials, or other content that the user indicated a dislike of, as indicated in ***Eubanks*** (column 4 lines 17-19).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to store statistical information derived from the at least one input signal, and store one or more extracted fingerprints that do not match any fingerprints in the database of fingerprints to the database of fingerprints as an unknown object fingerprint in ***Pitman***, since an object database, storing information about pertaining to identified audio segments, would provide information for market research purposes, as taught in ***Pitman*** (column 5 lines 60-61)

As per claim 51, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** discloses the method of claim 50, however ***Pitman*** does not disclose wherein the unknown but repeated objects are themselves stored in an unknown object database, and further comprising analyzing the unknown but repeated objects to determine metadata

describing the unknown but repeating objects, said metadata then being entered in the fingerprint database. However, ***Pitman*** does disclose metadata stored in a fingerprint database corresponding to extracted fingerprints (column 5 lines 10-16, *for each piece of audio content received, a feature signature, or a key, is generated,* and column 5 lines 25-30, *for each identified audio piece, audio content identification and source information are saved*). ***Ellis*** discloses storing unknown but repreated objects in the database (column 6 lines 16-22, *a broadcast signal is monitored, and if it is determined to deviate from all known signals it is tagged as a new signal of interest, and a signature (fingerprint) is extracted and saved in a database).*

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to store unknown object fingerprints and their metadata in ***Pitman***, since it would enable the system to simultaneously gather broadcast information from various geographical sites, and update its recognition database as indicated in ***Ellis*** (column 8 lines 65-67 and column 6 lines 7-8).

As per claim 52, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 51, however neither ***Pitman***, ***Ellis*** nor ***Eubanks*** explicitly disclose wherein analyzing the unknown but repeated objects to determine metadata comprises manual user identification and entry of the metadata for one or more of the repeated objects via the interactive user interface. ***Eubanks*** discloses a system for automatic control a radio turner, where the user can input preference information (column 5 lines

22-40, *the user indicates their like or dislike of a current song being played*). A system that enables user input is well known, as indicated by ***Eubanks***.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to enable manual user identification and entry of the metadata for one or more of the repeated objects via the interactive user interface in ***Pitman***, since it would enable the user to design the fingerprint database and system controls according to their personal preferences, as indicated in ***Eubanks***, (column 1 lines 48-67).

As per claim 53, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 51, however neither ***Pitman***, ***Ellis*** or ***Eubanks*** explicitly discloses analyzing the unknown but repeated objects to determine metadata comprises automatically identifying the unknown but repeated objects by comparing the objects to at least one additional object database, and importing any metadata associated with the automatically identified unknown but repeated objects into the fingerprint database. However, ***Pitman*** does disclose a user interface, and indicates that the system can be used to gather information about the identified audio segments (column 5 lines 44-65, *using identification and source information for each identified piece of information, a list is compiled which is used for market research purposes, popularity ratings, etc.*) using metadata extracted from fingerprints and stored in a database. In addition, ***Ellis*** discloses storing one or more extracted fingerprints that do not match any fingerprints in

the database (column 6 lines 16-22, *a broadcast signal is monitored, and if it is determined to deviate from all known signals it is tagged as a new signal of interest, and a signature (fingerprint) is extracted and saved in a database).*

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to analyze the unknown but repeated objects to determine metadata comprises automatically identifying the unknown but repeated objects by comparing the objects to at least one additional object database, and importing any metadata associated with the automatically identified unknown but repeated objects into the fingerprint database in ***Pitman***, ***Ellis*** and ***Eubanks***, since saving fingerprints that don't match fingerprints in the database would enable the system to update its recognition database as indicated in ***Ellis*** (column 6 lines 7-8). In addition, an object database, storing information about pertaining to identified audio segments, would provide quick access to information about recently recognized signals.

As per claim 54, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, and ***Pitman*** further discloses wherein the at least one user selectable broadcast signal is a radio station (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including radio).*

As per claim 55, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, and ***Pitman*** further discloses wherein the at least one user

selectable broadcast signal is any of a television broadcast signal, an internet broadcast signal, a network broadcast signal, and a cable broadcast signal (column 3 lines 1-6, *the system can accommodate any type of broadcast signal, including television, internet and cable).*

As per claim 56, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, and ***Pitman*** further discloses wherein the network is the Internet (column 2 line 66- column 3 line 5 and Figure 1).

As per claim 58, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, ***Pitman*** further discloses wherein the interactive user interface comprises at least one predefined user selectable query for retrieving statistical information and metadata from the object database by user selection of the predefined user selectable query (column 5 lines 31-36, *a copyright holder uses the system to automatically compile a list of broadcasts of its copyrighted content*).

As per claim 59, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, and Pitman further discloses wherein media objects include any of music, advertisements, commercials, station identifiers, speech audio clips, videos, and emergency broadcast signals (Abstract, *broadcast audio content*).

As per claim 60, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, and ***Pitman*** discloses wherein metadata includes any of radio station call signs, music titles, song titles, music artist names, music album titles, commercial titles, commercial product information, and video titles (column 5 lines 25-30, *for each identified audio piece, audio content identification and broadcast source (station call sign) information are saved*).

As per claim 61, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, and ***Pitman*** further discloses wherein statistical information includes any of media object play times, media object play dates, media object play station, and media object number of plays (column 5 lines 41-52, *a list is compiled of what audio content was broadcast by a particular broadcast station*).

As per claim 63, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, and ***Pitman*** further discloses wherein the interactive user interface is a web-browser based user interface (column 3 lines 18-20 and lines 50-60, *a web browser is used to decode multimedia data streaming from the first and second servers).*

As per claim 64, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, and ***Pitman*** further discloses automatically generating at least one report comprising statistical and metadata for describing one or more of the media broadcast signals (column 5 lines 31-36, *a copyright holder uses the system to automatically compile a list of broadcasts of its copyrighted content*).

As per claim 65, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 64, further comprising automatically transmitting the at least one report to at least one of the remote client computers (column 5 lines 31-36 and Figure 1, *a copyright holder uses the system to automatically compile a list of broadcasts of its copyrighted content, the copyright holder accessing the system through a client computer*).

Claim 66 is rejected over ***Pitman*** in view of ***Ellis*** further in view of ***Eubanks*** and further in view of ***Burges***.

As per claim 66, ***Pitman*** in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claim 50, however neither ***Pitman***, ***Ellis*** nor ***Eubanks*** discloses wherein deriving the media object trace fingerprint from each sample comprises applying a distortion discriminant analysis to each sample for deriving a trace representing the

media object trace fingerprint from each sample. ***Burges*** discloses a system that uses distortion discriminant analysis for audio fingerprinting (Abstract).

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to extract at least one fingerprint from each of at least one sample comprises performing a distortion discriminant analysis of each sample to generate fingerprints in ***Pitman***, ***Ellis***, and ***Eubanks*** since it provides an efficient feature extraction operation that produces robust features from the audio data, as indicated in ***Burges*** (Abstract).

Claims 57 and 62 are rejected over ***Pitman*** in view of ***Ellis*** further in view of ***Eubanks*** and further in view of ***IEEE*** ("IEEE 100 The Authoritative Dictionary of IEEE Standards Terms" IEEE 2000).

Pitman in view of ***Ellis*** and further in view of ***Eubanks*** disclose the method of claims 50 and 55, however neither ***Pitman***, ***Ellis*** nor ***Eubanks*** disclose wherein the object database is an SQL database, and a user selectable query includes SQL queries for extracting information relating to the media objects, metadata, and statistical information in the object database. However, SQL is a standard language that provides an interface to relational database systems, as indicated by ***IEEE***.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have an SQL database and provide SQL queries in ***Pitman***, ***Ellis***,

and ***Eubanks,*** since SQL is a reliable standard for database queries, thus removing the need to devote time and resources to developing a new method for database query.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dorothy Sarah Siedler whose telephone number is 571-270-1067. The examiner can normally be reached on Mon-Thur 9:30am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richemond Dorvil can be reached on 571-272-7602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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